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A Policy Framework for Institutional Nutrition and Well-Being Support Among Adolescent Athletes in Philippine Schools

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Abstract

Aims: Adolescent athletes navigate a demanding mix of physical growth, academic responsibilities, and intense sports training—making their nutritional needs uniquely complex. Although research clearly highlights the connection between good nutrition, athletic performance, and mental health, most schools in the Philippines and around the world still lack thorough, organized systems to support student-athlete well-being.

Methodology: This policy review analysis draws on international best practices and identifies persistent gaps in current approaches, especially within the Philippine education system, where informal advice, limited staff training, and food insecurity remain common issues. Using a seven-pillar framework—encompassing structured nutrition services, staff development, mental health integration, supplement regulation, equitable food access, sport-specific curriculum, and accountability—this study calls for a shift from relying on individual initiative to building strong institutional support.

Results: The findings emphasize that nutrition and well-being must be at the core of school policy and equity efforts. Recommendations include establishing dietitian-led services, forming interdisciplinary wellness committees, and creating scalable solutions for resource-limited schools.

Conclusion: By closing the gap between policy and practice, Philippine schools can foster environments where every adolescent athlete can achieve their full potential. Ultimately, treating nutrition and well-being as essential governance issues is vital for building a healthier, more resilient generation of youth athletes.

Keywords: Adolescent athletes, sports nutrition, institutional policy, food insecurity, Philippine education

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Introduction

Optimal nutrition is widely recognized as a cornerstone for athletic performance, growth, recovery, and overall well-being among adolescent athletes [1,2]. Adolescence represents a unique developmental period, marked by

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rapid physiological, cognitive, and social changes. When paired with the demands of competitive sports, these factors intensify nutritional needs and health risks [3]. For student-athletes, maintaining adequate energy and nutrient intake extends far beyond personal health—it is fundamental for training adaptation, muscle repair, immune function, cognitive performance, and both short- and long-term development.

Several studies consistently demonstrate that sufficient nutrition during adolescence is associated not only with better physical outcomes but also with improved academic achievement and psychological resilience [4,5]. For example, studies in the United States and Australia have found that adolescent athletes with optimal dietary practices tend to show greater concentration, faster recovery, and fewer injuries than their peers with inconsistent or inadequate nutrition [6,7]. Conversely, poor dietary habits have been linked to increased risks of overuse injuries, delayed maturation, impaired immunity, and higher susceptibility to mood disturbances and anxiety [8,9].

Despite the clear importance of nutrition, significant gaps persist in how support systems are put into practice across educational institutions globally [10,11]. For example, the National Collegiate Athletic Association (NCAA) in the United States, along with high school athletic associations, has issued guidelines promoting the involvement of registered dietitians and the creation of comprehensive nutrition programs. However, surveys reveal that many schools, including some universities, still lack access to dedicated sports nutrition experts, relying instead on coaches or volunteers for dietary advice [12,13]. These individuals, while committed to athlete success, often report only basic nutrition knowledge and limited confidence when faced with complex issues such as Relative Energy Deficiency in Sport (RED-S), disordered eating, or supplement safety [6].

Similar trends are observed in Australia and the United Kingdom. The Australian Institute of Sport and Sport England have recognized that adolescent athletes in resource-limited school environments are at particular risk for insufficient energy intake, micronutrient deficiencies, and exposure to conflicting nutrition messages [14, 15]. A recent survey in the UK found that fewer than half of secondary schools offered any structured nutrition education for student-athletes, and only a minority had established referral pathways to dietetic services [16,17]. Canadian research echoes these findings, highlighting a disconnect between national best-practice recommendations and the actual delivery of support within schools and sports clubs [18,19].

These challenges are compounded by broader sociocultural and economic factors. In both high-income and resource-constrained settings, food insecurity is increasingly recognized as a significant barrier to youth participation in sports [20].A U.S. study found that up to 25% of high school athletes experience some degree of food insecurity, a factor linked to lower energy availability, poorer academic performance, and a higher risk of injury [21]. . In Canada, food insecurity has been associated with disparities in sports access, with low-resource schools reporting higher dropout rates among adolescent athletes due to inadequate nutrition and lack of institutional support [22]. Mental health represents another critical dimension closely tied to nutrition. Evidence from the NCAA, as well as large-scale studies in Europe and North America, suggests that adolescent athletes are vulnerable to anxiety, depression, and disordered eating—often worsened by competitive pressure, body image concerns, and inconsistent access to healthy food [23, 24]. Integrated models from the U.S. and Australia now advocate for routine mental health screening alongside nutritional assessments, underscoring the need for interdisciplinary care teams within schools and sports academies [25].

The use and regulation of dietary supplements is another emerging issue, particularly in high-income countries. Studies from the U.S., Australia, and the UK report that supplement use is widespread among adolescent athletes, with prevalence estimates ranging from 45% to over 90%, depending on the sport and age group [26, 27]. Alarmingly, many young athletes remain unaware of the risks related to contamination, inadvertent doping, or adverse health consequences from unregulated supplements [28]. National sports agencies are now promoting a "food-first" philosophy and strict supplement protocols, but many schools and local clubs lack the necessary structures and expertise to implement these guidelines consistently [29].

Taken together, the international evidence points to a consistent theme: well-intentioned policies and guidelines often fail without institutional investment, interprofessional training, and robust accountability mechanisms [30,31]. These studies collectively demonstrate that policy intentions alone are insufficient without proper institutional support, capacity building, and implementation mechanisms. While some elite academies and private schools have embedded nutritionists and mental health professionals within their athletic programs, most other schools—especially those serving low- and middle-income communities—continue to rely oninformal systems, ad hoc advice, and limited resources [13].

In the Philippines, these challenges are compounded by additional barriers such as large class sizes, limited funding, and significant variation in local food environments [32,33]. Despite progress in policy, such as DepEd Order 13 (2017), there remains a substantial gap between policy intent and implementation that truly addresses the specific needs of adolescent athletes [34]. Adapting international best practices to resource-constrained settings is therefore essential. In summary, literature from high-income countries strongly supports the case for institution-led, evidence-based frameworks that address nutrition, mental health, supplement safety, and food insecurity for adolescent athletes. The Philippine experience echoes many of these challenges, but also stands to benefit from policy innovations and global lessons. By shifting responsibility from individuals to institutions, schools can create safer, more equitable, and more effective environments for young athletes' development.

Conceptual Framework

At the heart of this policy framework is the belief that schools are uniquely positioned to support adolescent athlete nutrition and well-being in a comprehensive way. The model centralizes educational institutions as the primary hubs for student-athlete health, moving away from fragmented or individual approaches (Figure 1).

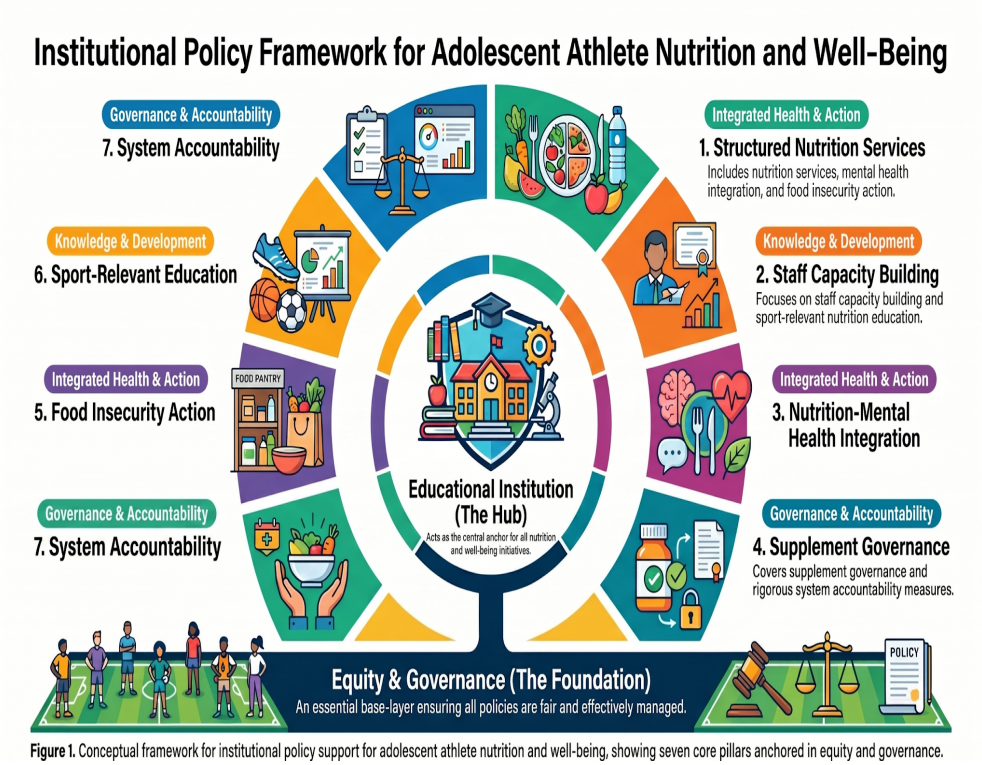

Figure 1. Conceptual framework for institutional policy support for adolescent athlete nutrition and well-being, showing seven core pillars anchored in equity and governance.

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The framework is built on seven strategic pillars, each addressing a crucial aspect of athlete support:

- Direct Interventions: Structured Nutrition Services and targeted Food Insecurity Action ensure that all athletes, regardless of background, have access to the fuel they need.
- Knowledge and Growth: Staff Capacity Building and Sport-Relevant Education are prioritized to empower both mentors and athletes with the information required for healthy choices.
- Health and Safety: Integration of Nutrition-Mental Health support and clear Supplement Governance are designed to safeguard athletes from unregulated substances and unhealthy eating patterns.
- Oversight: Robust System Accountability ensures that these policies are not only implemented but also regularly assessed for effectiveness.

All of these pillars rest on a strong foundation of Equity & Governance, guaranteeing fair policy implementation supported by institutional leadership. The dynamic feedback loops between each pillar and the central institution mean that the system adapts over time, continually refining its approach based on outcomes and evolving needs.

Research Methodology

This study employed a policy review analysis methodology anchored in a policy-focused and evidence-based approach [35]. It examined how institutional policies, program guidelines, and related evidence can support adolescent athlete nutrition and well-being, with particular attention to the Philippine school context. The review drew on both international and local sources, including peer-reviewed journal articles, policy documents, legislative measures, administrative directives, and best-practice guidelines. Literature published from 2015 to 2026 was gathered through Google Scholar, Scopus, Web of Science, and other reputable indexed sources.

The analysis covered policy and evidence from the Philippines and selected countries with established school and athlete support systems, including the United States, Australia, the United Kingdom, and Canada. Key areas of review included sports nutrition, adolescent well-being, mental health integration, supplement regulation, and food insecurity. Through this process, recurring policy themes, implementation strategies, and institutional best practices were identified across different settings.

The findings from the review were then organized into a conceptual framework Figure 1., that positions the institution as the central actor in athlete support. The seven pillars of the framework were derived and refined through consistent patterns found in the literature and policy documents reviewed. The current Philippine school setting was subsequently assessed against this framework to determine areas of alignment, limitations, and critical policy gaps.

Finally, the study formulated actionable policy and program recommendations based on the evidence gathered, with emphasis on feasibility, adaptability, and scalability in resource-constrained school environments. By using this policy review analysis methodology, the study provides a holistic basis for strengthening institutional support for adolescent athlete nutrition and well-being in the Philippines and in similarly structured educational systems [13,33].

Discussion

Making nutrition and well-being an institutional responsibility—rather than an individual one—is supported by a growing body of evidence worldwide [30, 31]. Drawing from both international and Philippine experiences, this section unpacks why each of the seven pillars is essential for building a truly supportive environment for student-athletes.

From Individual Willpower to Systemic Support

Nutrition and well-being should be treated as institutional responsibilities, not as matters of individual discipline alone. Current consensus and review literature shows that athlete health is best supported through coordinated systems that combine nutrition, medical, and mental health expertise rather than leaving athletes to manage complex needs on their own [36, 37,38]. This is especially important for adolescent athletes, whose nutritional demands are shaped not only by training and recovery but also by growth and development [39].

An individual-responsibility approach is often inadequate because athletes do not always have the knowledge, access, or support needed to make consistently sound decisions. Reviews of athlete nutrition knowledge show that knowledge levels are often limited or inconsistent and that the link between knowledge and actual dietary behavior is only modest [6, 40]. At the same time, food access, scheduling pressures, and service gaps can interfere with healthy choices even when athletes are motivated [41,42]. These problems are structural, not simply personal. This issue is likely even more important in lower-resource settings. In the Philippines, broader evidence shows that socioeconomic status shapes the quality and variety of food consumed by school-aged children and adolescents [33]. That does not directly measure athlete support systems, but it does suggest that adolescent athletes in resource-constrained settings may face added barriers to meeting nutrition needs. Taken together, the literature supports a shift away from relying on willpower alone and toward building institutional systems that make healthy practice possible.

Pillar 1 Structured Nutrition Services

Structured nutrition services are a core feature of high-quality athlete support. A recent interassociation consensus statement identifies registered dietitian nutritionists with sports expertise as the preferred providers of nutrition services in collegiate athletics because they are trained in medical nutrition therapy, behavioral counseling, food-

service management, recovery support, and performance nutrition [36]. This scope goes beyond the usual preparation of coaches, teachers, or school nurses and allows nutrition care to be individualized to training load, health status, and risk profile.

Evidence from collegiate sport suggests that access to sports dietitians is associated with better athlete outcomes. Review evidence indicates that sports dietitians can improve nutrition knowledge and related behaviors, although stronger experimental studies are still needed [43]. Observational evidence also shows that athletes who identify a sports dietitian as their primary nutrition source report more favorable dietary habits, including better nutrient periodization and healthier food choices during travel [13]. These findings support the view that structured nutrition services can improve daily practice, not just theoretical knowledge.

In settings where full-time sports dietitians are not yet feasible, phased models are still possible. The consensus statement describes multiple service models through which schools can organize dietitian-directed care depending on resources [36]. For schools in the Philippines, a practical starting point would be shared-service arrangements, referral partnerships, or cross-sector collaborations that extend access to qualified nutrition support without requiring a fully staffed sports nutrition department from the outset.

Pillar 2 Capacity Building for Coaches and Frontline Staff

Coaches are often among the most influential adults in an athlete's daily environment, but their nutrition knowledge is often limited. Studies from the United Kingdom, Canada, and high school settings show that many coaches give nutrition advice despite lacking strong competence in this area. In some cases, coaches performed poorly on basic questions about carbohydrate, fat, hydration, and related sport nutrition topics [44, 45]. Review work also shows important gaps in coach knowledge and behavior around low energy availability and related risks [46].

At the same time, the literature suggests that coach education can help. Coaches who had formal nutrition training or certification tended to score better on knowledge measures [44]. A brief nutrition session embedded within an existing mandatory coach education course in junior Australian football improved both knowledge and confidence [47]. This matters because coaches do not need to replace dietitians in order to be useful; they need enough training to avoid misinformation, reinforce safe practice, and recognize when referral is needed.

For that reason, coach development should include practical training in nutrition, hydration, recovery, supplement safety, and warning signs of low energy availability or disordered eating. A reasonable application in the Philippine context would be to embed these topics into routine professional development, licensing, or certification systems for coaches and other frontline athletic staff.

Pillar 3 Integration of Nutrition and Mental Health Services

Nutrition and mental health should not be managed as separate issues in athletes. Work on relative energy deficiency in sport shows that low energy availability can affect both health and performance, while newer review evidence indicates that problematic low energy availability is also associated with mood change, anxiety, depressive symptoms, reduced well-being, and eating disorders [3, 48]. More broadly, athlete mental health research shows that athletes are vulnerable to depression, anxiety, eating-related problems, and other forms of psychological strain, even when outward performance remains strong [23, 15].

This makes integrated screening and coordinated care especially important. Institutional screening practices for athlete mental health vary widely, but schools with written plans and stronger clinical staffing are more likely to screen for concerns such as disordered eating, depression, and anxiety [49]. Position statements and service-provision models in sport likewise emphasize multidisciplinary care, structured referral pathways, and collaboration among clinicians and support staff [37, 38]. These findings support early identification systems that connect nutrition risk with mental health risk instead of treating them in isolation.

A practical implication is that schools should create a coordinated pathway linking nutrition services, counseling, and sports medicine. One workable model would be a wellness or athlete-support committee that brings together the relevant staff for screening, referral, and follow-up. This specific committee structure is an institutional inference from the multidisciplinary care literature [37, 38]. In lower-resource settings, even a modest referral network may be better than leaving athletes to navigate nutrition problems and mental health concerns on their own.

Pillar 4: Evidence-Based Supplement Governance

Dietary supplement use is widespread among young athletes, but safe-use knowledge is often limited. In a high school sample, 94% of athletes reported using supplements in the previous year, yet only 24% said they knew for certain that all of their supplements were third-party tested [50]. Knowledge was also weak on practical points such as how to identify, locate, and purchase tested products. Similar patterns appear in collegiate settings. Among NCAA Division I student-athletes, supplement use was highly prevalent, knowledge scores were generally low, and consistent use of third-party-tested products remained incomplete [51, 29]. These findings suggest that supplement use among student-athletes often develops faster than their ability to judge product safety and evidence quality.

This knowledge gap has clear governance implications. The IOC consensus statement notes that supplement use is common across sports, but only a small number of products have strong evidence for performance benefit, and inadvertent ingestion of prohibited substances remains a known risk [52]. That concern is reinforced by review evidence showing that some supplements contain undeclared prohibited substances, mislabelled ingredients, or other adulterants that can expose athletes to anti-doping violations and health risks [53]. In practice, this means that supplement decisions should not be treated as a matter of personal preference alone. For school-age and collegiate athletes, supplement use requires structured oversight because the risks extend beyond wasted money to possible harm, failed drug tests, and reputational damage.

For that reason, schools should adopt an evidence-based supplement governance framework. At minimum, this framework should require education on supplement safety, efficacy, and doping risk, while also directing athletes toward products that have been verified through recognized third-party testing programs [29]. Education is especially important because intervention work with high school athletes shows that short, targeted instruction can increase the intention to choose safer, third-party-tested supplements [50]. Taken together, the literature supports a policy approach in which supplements are used only when justified by clear performance, health, or recovery needs and when product quality can be independently verified [52, 53]. Such an approach would align athlete support with both performance goals and duty-of-care responsibilities.

Pillar 5: Tackling Structural Food Insecurity

Food insecurity can undermine both athletic participation and performance. Studies of collegiate athletes show that it is a common problem, with reported prevalence ranging from 9.9% to 65% across settings [41]. In one Division I cohort, 60% of athletes were classified as food insecure [42]. Other studies found prevalence estimates of 14.7% in Division III athletes [21], 32.1% in female collegiate athletes despite institutional support [54], and 34.7% in Division I athletes at a California state university. These findings suggest that many athletes face difficulty meeting their nutritional needs even while participating in organized sport.

The main causes appear to be structural rather than individual. Athletes frequently report financial strain, limited time, restricted dining access, and conflicts between practice schedules and meal availability. Research evidence further shows that some athletes cope by skipping meals, buying cheaper foods, or relying on limited campus options that do not fully support their training demands [55]. These barriers matter because athletes themselves report lower energy, poorer concentration, and reduced athletic performance when food access is inadequate [21].

For that reason, schools should treat food access as part of the athlete support system rather than as a personal responsibility alone. Evidence from the current literature supports interventions such as screening for food insecurity, schedule-compatible meal access, flexible fueling support, and targeted financial or food assistance for at-risk athletes. These studies indicate that tackling food insecurity requires institutional action to ensure that athletes have reliable access to sufficient, appropriate, and timely food.

Pillar 6: Sport-Relevant, Contextualized Nutrition Education

Nutrition education is most useful when it is practical, sport-specific, and tied to the real demands of training and competition. Reviews of athlete nutrition interventions show that education can improve nutrition knowledge and can also improve aspects of dietary intake, although results are strongest when programs are well designed and closely matched to athlete needs [56, 57, 40]. This matters because athletes often show only moderate or low nutrition knowledge, and that gap is associated with weaker dietary behaviors. In other words, information alone is not enough; education needs to help athletes apply nutrition principles in daily sport settings.

Evidence from recent athlete-focused programs points in the same direction. In junior elite triathletes, a remotely delivered education program improved sports nutrition knowledge and several aspects of dietary intake [58]. In high school athletes, a short online supplement education program improved practical knowledge about how to find and purchase third-party-tested products and increased familiarity with banned-substance issues [59]. Athletes also report clear preferences for how such education should be delivered: they favor real-life examples, hands-on activities, discussion with a facilitator, and sessions led by a credible sport nutrition professional who understands their sport [60]. These findings suggest that effective nutrition education should focus on topics such as fueling, hydration, recovery, supplement safety, and training-day food choices in formats that athletes can use immediately.

For that reason, schools should embed nutrition education into sport programs rather than treating it as an optional add-on. A reasonable application of the current evidence is to integrate short, sport-relevant nutrition modules into sports-track curricula, athlete development activities, and coach education or certification pathways [60, 58, 59]. This would make nutrition guidance more consistent, more practical, and more likely to shape daily behavior. In settings such as the Philippines, where formal sports nutrition support may be uneven, curriculum-based delivery could also help reduce reliance on fad diets, misinformation, and unsafe supplement practices.

Pillar 7: Governance, Monitoring, and Accountability

Strong policy requires strong oversight. Consensus guidance on sports medicine management in schools and colleges emphasizes that athlete health protection depends on clear administrative structures, defined responsibilities, and coordination across professional roles [61]. Related work on safeguarding student-athlete welfare further stresses the importance of a clear chain of command and of protecting medical decision-making from conflicts of interest [62, 63]. These principles apply not only to injury care, but also to nutrition and wellness policy: without clear governance, even well-written policies may not be implemented consistently.

Implementation research shows why accountability matters. Studies of school sport safety policy have found that evidence-based best practices are not reliably adopted unless they are formally required, monitored, and supported by leadership [64,65]. Work on successful policy change at the school level also points to shared leadership and open communication between medical professionals and athletic administrators as key conditions for adoption [66]. The implication is that good practice does not spread automatically. Institutions need a structure that checks whether policy is actually being followed and that identifies gaps before they become routine failures.

For that, schools should establish a multidisciplinary oversight mechanism for athlete wellness and nutrition policy. A practical model would be a wellness committee or similar body that includes representatives from nutrition, medicine, coaching, and administration and is tasked with reviewing implementation, monitoring compliance, and reporting gaps for corrective action. In the Philippine context, such a structure could also be linked with local health offices or school health units so that nutrition policy is supported by both education and public health systems. Taken together, the evidence suggests that accountability is not a final step after policy design; it is part of policy effectiveness itself.

Adapting the Model for Resource-Limited Philippine Schools

The proposed framework does not require all schools to begin with a fully staffed sports nutrition system. In resource-limited settings, progress can begin through phased and practical strategies that strengthen existing structures rather than replace them. Current evidence supports flexible service models, shared professional support, and institution-level initiatives that expand access even when specialist staffing is limited [36, 67]. In the Philippine context, this means building from what schools already have while creating referral pathways for more complex needs.

A practical starting point would be to cross-train existing school health personnel and frontline staff to conduct basic screening, identify risk, and make appropriate referrals. Schools may also benefit from shared nutrition professionals at the district or division level, stronger coordination with local health units, and greater use of affordable, locally available foods when designing athlete meal support. These approaches are especially relevant in contexts where socioeconomic constraints shape adolescent food access and diet quality [33]. Although modest in scope, such measures can begin to reduce service gaps and create a workable foundation for more comprehensive athlete support over time.

Equity and Adolescent Health

Positioning nutrition and well-being as institutional responsibilities is ultimately a matter of equity. When schools provide structured support, student-athletes are less likely to be left to navigate nutrition, recovery, and mental health challenges on their own. The literature shows that adolescent and young athletes benefit from early identification, coordinated care, and environments that support both health and performance [15, 23]. In this sense, institutional action is not only a performance strategy but also a way to reduce preventable risk and unequal access to support.

Embedding nutrition and wellness support within school systems shifts the approach from reactive to proactive. Rather than waiting for injury, low energy availability, mental health concerns, or poor dietary practices to become visible problems, schools can create conditions that help prevent these issues earlier [49,37]. For Philippine schools, this approach offers a realistic way to align international evidence with local realities by making student-athlete support more systematic, more inclusive, and more sustainable.

Limitations of the Study

This study is limited by its non-empirical design and reliance on published literature, policy documents, and guidelines rather than primary data. As a policy review, it may not fully capture variations in local implementation, unpublished practices, or recent institutional changes. In addition, the proposed framework is conceptual and has not yet been validated through field-based application. Despite these limitations, the study provides an evidence-based basis for policy development and future research on adolescent athlete nutrition and well-being.

Conclusions and Recommendations

The findings of this review indicate that the nutrition, health, and performance of adolescent athletes are shaped not only by individual behavior but also by the institutional conditions in which they train and study. Across the literature, a consistent pattern emerges: when schools lack coordinated systems for nutrition support, staff training, mental health integration, supplement oversight, food access, and accountability, student-athletes are left more vulnerable to preventable health risks and avoidable performance limitations.

The proposed seven-pillar framework offers a practical way of organizing these needs into a coherent school-based approach. Rather than treating nutrition and well-being as isolated concerns, the framework emphasizes that effective support depends on structured services, trained personnel, integrated care, safe policy, and sustained oversight. In the Philippine context, this is especially relevant because resource constraints, uneven access to specialist support, and broader nutrition inequities may further widen the gap between athlete needs and institutional capacity.

All the evidence suggests that improving adolescent athlete outcomes requires a shift from fragmented and reactive practices toward coordinated, preventive, and equity-oriented school systems. By embedding nutrition and well-being into policy, staffing, education, and governance, schools can create conditions that better support both athletic performance and long-term health. In this way, student-athlete development becomes not only a matter of training success but also a matter of institutional responsibility and educational equity.

Recommendations

1. Establish structured nutrition support systems: Schools should strengthen access to nutrition services through partnerships with registered dietitians, public health nutritionists, or referral networks. In lower-resource settings, shared-service or phased models may provide a practical starting point.

2. Strengthen the capacity of coaches and frontline staff: Regular training in sport nutrition, hydration, low energy availability, supplement risk, and referral pathways should be integrated into staff development so that coaches can support, but not replace, qualified professionals.

3. Integrate nutrition and mental health support: Schools should adopt coordinated screening, referral, and follow-up systems that recognize the close relationship between nutritional risk, psychological well-being, and performance.

4. Develop evidence-based supplement governance: Institutions should promote a food-first approach, provide supplement safety education, and restrict supplement use to cases supported by clear need and verified product quality.

5. Address food insecurity as a structural concern: Screening, meal access, flexible fueling support, and targeted assistance for at-risk athletes should be incorporated into school athlete support systems.

6. Embed sport-relevant nutrition education into school programs: Practical, context-specific nutrition education should be integrated into sports curricula, athlete development activities, and coach education.

7. Create clear governance and accountability mechanisms: Schools should assign responsibility for implementation, monitoring, and review through multidisciplinary wellness structures that connect nutrition, health, coaching, and administration.

8. Use phased implementation in resource-limited settings: Schools with limited capacity can begin with basic screening, staff cross-training, local partnerships, and low-cost food-based strategies, while building toward more comprehensive services over time. Ultimately, supporting adolescent athletes requires schools to move beyond expecting individual resilience and toward building systems that make health, performance, and opportunity more achievable for all.

9. The conceptual model can be used by any instititions or agencies that find it useful for ther polcy.

Declarations

Author Contributions

Conceptualization, S.A.F., H.K.P., and R.N.L.; methodology, S.A.F.; software, H.K.P., T.S.J.; validation, A.B.E., H.K.P., and S.A.F.; formal analysis,H.K.P.; resources,S.A.F., H.K.P., R.N.L., T.S.J., and A.B.E.; data curation, S.A.F., H.K.P., R.N.L., T.S.J., and A.B.E.; writing—original draft preparation, S.A.F., H.K.P., and R.N.L., writing—review and editing, S.A.F., H.K.P.; visualization, H.K.P., T.S.J.; supervision, S.A.F., H.K.P., and R.N.L.; project administration, S.A.F., H.K.P., R.N.L., T.S.J., and A.B.E..; funding acquisition, S.A.F., H.K.P., R.N.L., T.S.J., and A.B.E. All authors have read and agreed to the published version of the manuscript

Data Availability Statement

This study is a policy analysis review based exclusively on previously published literature. No new datasets were generated or analyzed. Therefore, data sharing is not applicable.

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AI Declaration

During the preparation of this manuscript, artificial intelligence-assisted technologies were employed just for language polishing, grammar checking, figure design, and structural editing. All authors have reviewed, confirmed and approved all contents and are fully responsible for the correctness, interpretation and integrity of the text. No artificial intelligence tool was used to replace academic judgment in the preparation of the research investigation.

Conflicts of Interest

The author declares that there is no conflict of interest regarding the publication of this manuscript. In addition, the ethical issues, including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, and redundancies, have been completely observed by the authors.

References

[1] Thomas DT, Erdman KA, Burke LM. Position of the Academy of Nutrition and Dietetics, Dietitians of Canada, and the American College of Sports Medicine: nutrition and athletic performance. J Acad Nutr Diet. 2016;116(3):501-528.https://doi.org/10.1016/j.jand.2015.12.006

[2] Kerksick CM, Arent S, Schoenfeld BJ, Stout JR, Campbell B, Wilborn CD, et al. International society of sports nutrition position stand: nutrient timing. J Int Soc Sports Nutr. 2017;14(1):33.https://doi.org/10.1186/s12970-017-

0189-4
[3] Mountjoy M, Sundgot-Borgen JK, Burke LM, Ackerman KE, Blauwet C, Constantini N, et al. IOC consensus statement on relative energy deficiency in sport (RED-S): 2018 update. Br J Sports Med. 2018;52(11):687-697.https://doi.org/10.1136/bjsports-2018-099193
[4] Nikalansooriya A, Waidyarathna GNN, Kaththiriarachchi LS, Chandrasekara A, Kaththiriarachchi L. Role of Nutrition in Cognitive Development and Academic Performance During Adolescence: A Comprehensive Review. Cureus. 2025;17(11).https://doi.org/10.7759/cureus.96189
[5] Guazzelli Williamson V, Lee AM, Miller D, Huo T, Maner JK, Cardel M. Psychological resilience, experimentally manipulated social status, and dietary intake among adolescents. Nutrients. 2021;13(3):806. https://doi.org/10.3390/nu13030806
[6] Heaney S, O'Connor H, Michael S, Gifford J, Naughton G. Nutrition knowledge in athletes: a systematic review. Int J Sport Nutr Exerc Metab. 2011;21(3):248-261.https://doi.org/10.1123/ijsnem.21.3.248
[7] Aerenhouts D, Clarys P, Taeymans J, Van Cauwenberg J. Estimating body composition in adolescent sprint athletes: Comparison of different methods in a 3 years longitudinal design. PLoS One. 2015;10(8):e0136788.https://doi.org/10.1371/journal.pone.0136788
[8] Calcaterra V, Rossi V, Magenes VC, Baldassarre P, Grazi R, Loiodice M, et al. Dietary habits, depression and obesity: an intricate relationship to explore in pediatric preventive strategies. Front Pediatr. 2024;12:1368283.https://doi.org/10.3389/fped.2024.1368283
[9] Brenner JS, Watson A. Overuse injuries, overtraining, and burnout in young athletes. Pediatrics. 2024;153(2):e2023065129. https://doi.org/10.1542/peds.2023-065129
[10] Assefa EA. From nutrition to education: the contributions of school feeding programs on the UN 2030 Agenda and AU 2063 goals. Br Food J. 2025;1-18.
[11] Bose I, Baldi G, Kiess L, de Pee S. The "Fill the Nutrient Gap" analysis: An approach to strengthen nutrition situation analysis and decision making towards multisectoral policies and systems change. Matern Child Nutr. 2019;15(3):e12793. https://doi.org/10.1111/mcn.12793
[12] Torres-McGehee TM, Pritchett KL, Zippel D, Minton DM, Cellamare A, Sibilia M. Sports nutrition knowledge among collegiate athletes, coaches, athletic trainers, and strength and conditioning specialists. J Athl Train. 2012;47(2):205-211.https://doi.org/10.4085/1062-6050-47.2.205
[13] Hull MV, Jagim AR, Oliver JM, Greenwood M, Busteed DR, Jones MT. Gender differences and access to a sports dietitian influence dietary habits of collegiate athletes. J Int Soc Sports Nutr. 2016;13(1):38.https://doi.org/10.1186/s12970-016-0156-4
[14] Iyassu A, Laillou A, Tilahun K, Workneh F, Mogues S, Chitekwe S, et al. The influence of adolescents' nutrition knowledge and school food environment on adolescents' dietary behaviors in urban Ethiopia: A qualitative study. Matern Child Nutr. 2024;20:e13527. https://doi.org/10.1111/mcn.13527
[15] Purcell R, Rice S, Butterworth M, Clements M. Rates and correlates of mental health symptoms in currently competing elite athletes from the Australian national high-performance sports system. Sports Med. 2020;50(9):1683-1694. https://doi.org/10.1007/s40279-019-01138-5
[16] Vickers E. An examination of the dual career pathway and transitions UK student-athletes experience throughout university education [Dissertation]. Liverpool John Moores University; 2018.
[17] Vickers E, Morris R. Pathway decisions during the student-athlete transition out of university in the United Kingdom. J Appl Sport Psychol. 2022;34(4):803-824. https://doi.org/10.1080/10413200.2021.1963364
[18] Marcotte N. National-level Governance of Elite Youth Sport Events in Canada: A Sport Development Perspective [Doctoral dissertation]. University of Ottawa; 2018.
[19] Holway FE, Spriet LL. Sport-specific nutrition: practical strategies for team sports. In: Food, Nutrition and Sports Performance III. London: Routledge; 2013. p. 115-125.
[20] Noubani A. Food Insecurity and Adolescent Mental Health: A Mixed-Methods Investigation of School-Based Interventions in Sierra Leone and South Sudan [Doctoral dissertation]. Queen Margaret University; 2025.
[21] Brown ML, Karpinski C, Bragdon M, Mackenzie M, Abbey E. Prevalence of food insecurity in NCAA Division III collegiate athletes. J Am Coll Health. 2023;71(5):1374-1380. https://doi.org/10.1080/07448481.2021.1925345
[22] Patel R. Student Health, Inclusion and Food Transition (Shift): A Study of Food Insecurity Among Graduate Students at Saint Louis University [Master's thesis]. Saint Louis University; 2025.
[23] Rice SM, Purcell R, De Silva S, Mawren D, McGorry PD, Parker AG. The mental health of elite athletes: A narrative systematic review. Sports Med. 2016;46(9):1333-1353. https://doi.org/10.1007/s40279-016-0492-2
[24] Wang W, Schweickle MJ, Arnold ER, Vella SA. Psychological interventions to improve elite athlete mental

wellbeing: A systematic review and meta-analysis. Sports Med. 2025;55(4):877. https://doi.org/10.1007/s40279-024-02107-1
[25] Fadare SA, Pepania JE, Talib SAL, Adlawan HA, Fadare MC. Unlocking Longevity: Physical Educators as Gatekeepers for Senior Citizens' Wellness. Libr Prog-Libr Sci Inf Technol Comput. 2024;44(3).
[26] Lybbert H. A Cross-sectional Exploratory Study of (Safer) Nutritional Supplement Use and Knowledge in High School Athletes [Master's thesis]. Arizona State University; 2024.
[27] Fernández-Campos C, Dengo AL, Moncada-Jiménez J. Acute consumption of an energy drink does not improve physical performance of female volleyball players. Int J Sport Nutr Exerc Metab. 2015;25(3):271-277. https://doi.org/10.1123/ijsnem.2014-0101
[28] Zamboni M, Rubele S, Rossi AP. Sarcopenia and obesity. Curr Opin Clin Nutr Metab Care. 2019;22(1):13-19. https://doi.org/10.1097/mco.0000000000000519
[29] Vento KA, Wardenaar FC. Third-party testing nutritional supplement knowledge, attitudes, and use among an NCAA I collegiate student-athlete population. Front Sports Act Living. 2020;2:115. https://doi.org/10.3389/fspor.2020.00115
[30] Meng X, Horrell A, McMillan P, Chai G. 'Health First' and curriculum reform in China: The experiences of physical education teachers in one city. Eur Phys Educ Rev. 2021;27(3):595-612. https://doi.org/10.1177/1356336x20977886
[31] MacLean J, Mulholland R, Gray S, Horrell A. Enabling curriculum change in physical education: The interplay between policy constructors and practitioners. Phys Educ Sport Pedagog. 2015;20(1):79-96. https://doi.org/10.1080/17408989.2013.798406
[32] Boquet Y. Environmental challenges in the Philippines. In: The Philippine Archipelago. Cham: Springer; 2017. p. 779-829. https://doi.org/10.1007/978-3-319-51926-5_22
[33] Angeles-Agdeppa I, Monville-Oro E, Gonsalves JF, Capanzana MV. Integrated school based nutrition programmes improved the knowledge of mothers and schoolchildren. Maternal & child nutrition. 2019 May;15:e12794.https://doi.org/10.1111/mcn.12794
[34] Gould D. The current youth sport landscape: Identifying critical research issues. Kinesiol Rev. 2019;8(3):150-161. https://doi.org/10.1123/kr.2019-0034
[35] Wortham WK, Rodwin AH, Purtle J, Munson MR, Raghavan R. Revisiting the policy ecology framework for implementation of evidence-based practices in mental health settings. Implement Sci. 2023;18(1):58. https://doi.org/10.1186/s13012-023-01314-8
[36] Lambert V, Carbuhn A, Culp A, Ketterly J, Twombley B, White D. Interassociation consensus statement on sports nutrition models for the provision of nutrition services from registered dietitian nutritionists in collegiate athletics. J Athl Train. 2022;57(8):717-732. https://doi.org/10.4085/1062-6050-0628.21
[37] Chang CJ, et al. Mental health issues and psychological factors in athletes: detection, management, effect on performance, and prevention: American medical society for sports medicine position statement. Clin J Sport Med. 2020;30(2):e61-e87. https://doi.org/10.1097/JSM.0000000000000811
[38] Moesch K, Kenttä G, Kleinert J, Quignon-Fleuret C, Cecil S, Bertollo M. FEPSAC position statement: Mental health disorders in elite athletes and models of service provision. Psychol Sport Exerc. 2018;38:61-71. https://doi.org/10.1016/j.psychsport.2018.05.009
[39] Everett S. Optimizing performance nutrition for adolescent athletes: A review of dietary needs, risks, and practical strategies. Nutrients. 2025;17(17):2792.https://doi.org/10.3390/nu17172792
[40] Janiczak A, Devlin BL, Forsyth A, Trakman GL. A systematic review update of athletes' nutrition knowledge and association with dietary intake. Br J Nutr. 2022;128(6):1156-1169.
[41] Pacenta J, Starkoff BE, Lenz EK, Shearer A. Prevalence of and contributors to food insecurity among college athletes: A scoping review. Nutrients. 2024;16(9):1346.https://doi.org/10.3390/nu16091346
[42] Reader J, Gordon B, Christensen N. Food insecurity among a cohort of division I student-athletes. Nutrients. 2022;14(21):4703.https://doi.org/10.3390/nu14214703
[43] Riviere AJ, Leach R, Mann H, Robinson S, Burnett DO, Babu JR, et al. Nutrition knowledge of collegiate athletes in the United States and the impact of sports dietitians on related outcomes: a narrative review. Nutrients. 2021;13(6):1772. https://doi.org/10.3390/nu13061772
[44] Cockburn E, Fortune A, Briggs M, Rumbold P. Nutritional knowledge of UK coaches. Nutrients. 2014;6(4):1442-1453.https://doi.org/10.3390/nu6041442
[45] Couture S, Lamarche B, Morissette E, Provencher V, Valois P, Goulet C, et al. Evaluation of sports nutrition knowledge and recommendations among high school coaches. Int J Sport Nutr Exerc Metab. 2015;25(4):326-

334.https://doi.org/10.1123/ijsnem.2014-0195
[46] Hamer J, Desbrow B, Irwin C. A review exploring coach knowledge, attitudes/beliefs and behaviours towards low energy availability in athletes. Int J Sports Sci Coach. 2023;18(3):945-969.https://doi.org/10.1177/17479541221140188
[47] Belski R, Donaldson A, Staley K, Skiadopoulos A, Randle E, O'Halloran P, et al. Brief education intervention increases nutrition knowledge and confidence of coaches of junior Australian football teams. Int J Sport Nutr Exerc Metab. 2018;28(3):259-265.https://doi.org/10.1123/ijsnem.2017-0170
[48] Pensgaard AM, Sundgot-Borgen J, Edwards C, Jacobsen AU, Mountjoy M. Intersection of mental health issues and Relative Energy Deficiency in Sport (REDs): a narrative review by a subgroup of the IOC consensus on REDs. Br J Sports Med. 2023;57(17):1127-1135.https://doi.org/10.1136/bjsports-2023-106867
[49] Ebardo GJM, Peralta E, Ebardo GM, Ebardo AMM, Fadare MC, Ebardo GJM, et al. Performance and health implications of feeding athletes with the wrong diet during sports competition. Health Leadership Qual Life. 2025;4:730-730. https://doi.org/10.56294/hl2025730
[50] Wardenaar FC, Lybbert H, Morton L, Schott KD, Shumate C, Levinson S, et al. High school athletes' use and knowledge of (safe) nutritional supplement use: an exploratory study. J Diet Suppl. 2024;21(4):478-494.https://doi.org/10.1080/19390211.2023.2301361
[51] Schott KD, Seltzer RG, Zorn SP, Frakes M, Price M, Valliant MW, et al. Collegiate Student-Athletes' Use and Knowledge of Third-Party-Tested Nutritional Supplements: An Exploratory Study. J Athl Train. 2024;59(12):1219-1229.https://doi.org/10.4085/1062-6050-0098.24
[52] Maughan RJ, Burke LM, Dvorak J, Larson-Meyer DE, Peeling P, Phillips SM, et al. IOC consensus statement: dietary supplements and the high-performance athlete. Int J Sport Nutr Exerc Metab. 2018;28(2):104-125.https://doi.org/10.1123/ijsnem.2018-0020
[53] Jagim AR, Merfeld BR, Ambrosius A, Carpenter M, Fields JB, Jones MT. Nutrition knowledge and perceived dietary requirements of adolescent student-athletes: A pilot study. Nutrients. 2024;17(1):133.https://doi.org/10.3390/nu17010133
[54] Douglas CC, Camel SP, Mayeux W. Food insecurity among female collegiate athletes exists despite university assistance. J Am Coll Health. 2024;72(6):1904-1910.https://doi.org/10.1080/07448481.2022.2098029
[55] Anziano J, Zigmont VA. Understanding food insecurity among collegiate athletes: a qualitative study at a Public University in New England. Journal of athletic training. 2024 Apr 1;59(4):410-8.https://doi.org/10.4085/1062-6050-0660.22
[56] Tam R, Beck KL, Manore MM, Gifford J, Flood VM, O'Connor H. Effectiveness of education interventions designed to improve nutrition knowledge in athletes: a systematic review. Sports Med. 2019;49(11):1769-1786.https://doi.org/10.1007/s40279-019-01157-y
[57] Boidin A, Tam R, Mitchell L, Cox GR, O'Connor H. The effectiveness of nutrition education programmes on improving dietary intake in athletes: a systematic review. *Br J Nutr*. 2021;125(12):1359-1373. https://doi.org/10.1017/S000711452000494X
[58] Tan X, Rogers N, Brown N, MacDonald M, Bowler AL, Cox GR. The impact of a 'remotely-delivered' sports nutrition education program on dietary intake and nutrition knowledge of junior elite triathletes. Nutrients. 2022;14(24):5203.https://doi.org/10.3390/nu14245203
[59] Dow E, Schott KD, Morton L, Lybbert H, Nam K, Shumate C, et al. High school athletes' practical knowledge on where to find and order third-party tested nutritional supplements increases after education when compared to a control group. Nutr Bull. 2025;50(1):106-119. https://doi.org/10.1111/nbu.12724
[60] Solly H, Badenhorst CE, McCauley M, Slater GJ, Gifford JA, Erueti B, et al. Athlete Preferences for Nutrition Education: Development of and Findings from a Quantitative Survey. Nutrients. 2023;15(15):3313.https://doi.org/10.3390/nu15153313
[61] Courson R, Goldenberg M, Adams KG, Anderson SA, Colgate B, Cooper L, et al. Inter-association consensus statement on best practices for sports medicine management for secondary schools and colleges. J Athl Train. 2014;49(1):128-137.https://doi.org/10.4085/1062-6050-49.1.06
[64] Adams WM, Scarneo SE, Casa DJ. Assessment of evidence-based health and safety policies on sudden death and concussion management in secondary school athletics: a benchmark study. J Athl Train. 2018;53(8):756-767. https://doi.org/10.4085/1062-6050-220-17
[65] Scarneo-Miller SE, Eason CM, Adams WM, Stearns RL, Casa DJ. State-level implementation of health and safety policies to prevent sudden death and catastrophic injuries within high schools: an update. Am J Sports Med. 2021;49(12):3372-3378.https://doi.org/10.1177/03635465211029272

[66] Valiyev Y, Aliyev S, Huseynova K, Khalilov T. Planning and implementation of physical education and sports policy in the context of strategic management of education: an administrative perspective analysis. Science of Law. 2025 May 26;2025(1):159-66.https://doi.org/10.55284/zk11v055
[67] Garcia MB, editor. Global innovations in physical education and health. Hershey: IGI Global; 2024.https://doi.org/10.4018/979-8-3693-3952-7